CLAIMS

1. In an image interpolating method for interpolating a pixel at an intermediate position between a first original pixel and a second original pixel adjacent to the first original pixel, an image interpolating method is characterized by comprising:

a first step of calculating an edge component for judging whether or not an interpolated pixel exists in the vicinity of an edge position of original image data;

a second step of finding a range where pixel data on the interpolated pixel is settable on the basis of the calculated edge component and pixel data on the first and second original pixels;

a third step of selecting a plurality of sets of opposed pixels between which the interpolated pixel is sandwiched diagonally, and finding, for each of the sets, the pixel data on the interpolated pixel in a case where a correlation value represented by the sum of the absolute values of the differences between the pixel data on the interpolated pixel and pixel data on the opposed pixels is the minimum in the range where the pixel data on the interpolated pixel is settable and the minimum correlation value;

and

a fourth step of finding the pixel data on the interpolated pixel on the basis of the pixel data on the interpolated pixel in the case where the correlation value is the minimum and the minimum correlation value which are found for each of the sets.

2. The image interpolating method according to claim 1, characterized in that when an original pixel adjacent to the first original pixel and opposite to the second original pixel is taken as a third original pixel, and an original pixel adjacent to the second original pixel and opposite to the first original pixel is taken as a fourth original pixel, the edge component is calculated on the basis of pixel data on the first to fourth original pixels at the first step.

3. The image interpolating method according to claim 2, characterized in that letting d1 be the pixel data on the first original pixel, d2 be the pixel data on the second original pixel, d3 be the pixel data on the third original pixel, and d4 be the pixel data on the fourth original pixel, an edge component E is calculated on the basis of an equation for operation $E = -d3 + d1 + d2 - d4$.

4. The image interpolating method according to claim 3, characterized in that letting E be the edge component found at the first step, Th be a predetermined threshold, d_{max} be the larger one of the pixel data on the first original pixel and the pixel data on the second original pixel, d_{min} be the smaller one of them, and d be $d_{max}-d_{min}$, a range S where the pixel data on the interpolated pixel is settable is found on the basis of the following expression at the second step:

if $E > Th$, then $d_{min} + d/2 \leqq S \leqq d_{max}$,

if $-Th \leqq E \leqq Th$, then $d_{min} + d/4 \leqq S \leqq d_{max} - d/4$, and

if $E < -Th$, then $d_{min} \leqq S \leqq d_{min} + d/2$.

5. The image interpolating method according to claim 1, characterized in that letting x be the pixel data in the settable range S found at the second step, and da and db be respectively the pixel data on the two original pixels composing one set of opposed pixels, a correlation value L corresponding to the set is calculated by $L = |da-x| + |db-x|$.

6. The image interpolating method according to claim 1, characterized in that the fourth step comprises the steps of

selecting the minimum of the minimum

correlation values found for the sets at the third step,

extracting the pixel data on the interpolated pixel in a case where the selected minimum of the minimum correlation values is given,

determining, when the number of minimums of the minimum correlation values is one, the pixel data on the interpolated pixel in a case where the minimum of the minimum correlation values is given as the pixel data on the interpolated pixel, and

determining, when there are a plurality of minimums of the minimum correlation values, the average of the pixel data on the interpolated pixel in a case where the minimums of the minimum correlation values are respectively given as the pixel data on the interpolated pixel.

7. The image interpolating method according to claim 1, characterized in that the fourth step comprises the steps of

selecting the minimum of the minimum correlation values found for the sets at the third step,

extracting the pixel data on the interpolated pixel in a case where the selected minimum of the minimum correlation values is given,

determining, when the number of minimums of the minimum correlation values is one, the pixel data on the interpolated pixel in a case where the minimum of the minimum correlation values is given as the pixel data on the interpolated pixel, and

extracting, when there are a plurality of minimums of the minimum correlation values, the maximum and the minimum of the pixel data on the interpolated pixel in a case where the minimums of the minimum correlation values are respectively given, and determining the average of the extracted maximum and minimum as the pixel data on the interpolated pixel.

8. The image interpolating method according to claim 1, characterized in that the fourth step comprises the steps of

selecting the minimum of the minimum correlation values found for the sets at the third step,

extracting the pixel data on the interpolated pixel in a case where the selected minimum of the minimum correlation values is given,

determining, when the number of minimums of the minimum correlation values is one, the pixel data on the interpolated pixel in a case where the minimum

of the minimum correlation values is given as the pixel data on the interpolated pixel, and

selecting, when there are a plurality of minimums of the minimum correlation values, the pixel data obtained from opposed pixels in closest proximity to the interpolated pixel out of the pixel data on the interpolated pixel in a case where the minimums of the minimum correlation values are respectively given, and determining, when the number of the selected pixel data is one, the pixel data as the pixel data on the interpolated pixel, while determining, when the number of the selected pixel data is two, the average of the pixel data as the pixel data on the interpolated pixel.

9. In an image interpolating method for interpolating a pixel at an intermediate position between a first original pixel and a second original pixel adjacent to the first original pixel, an image interpolating method is characterized by comprising:

a first step of calculating an edge component for judging whether or not an interpolated pixel exists in the vicinity of an edge position of original image data;

a second step of correcting the calculated edge

component on the basis of a predetermined pseudo noise component;

a third step of finding a range where pixel data on the interpolated pixel is settable on the basis of an edge component after the correction and pixel data on the first and second original pixels;

a fourth step of selecting a plurality of sets of opposed pixels between which the interpolated pixel is sandwiched diagonally, and finding, for each of the sets, the pixel data on the interpolated pixel in a case where a correlation value represented by the sum of the absolute values of the differences between the pixel data on the interpolated pixel and pixel data on original pixels in the vicinity of the opposed pixels is the minimum in the range where the pixel data on the interpolated pixel is settable and the minimum correlation value; and

a fifth step of finding the pixel data on the interpolated pixel on the basis of the pixel data on the interpolated pixel in the case where the correlation value is the minimum and the minimum correlation value which are found for each of the sets.

10. The image interpolating method according to claim 9, characterized in that when an original

pixel adjacent to the first original pixel and opposite to the second original pixel is taken as a third original pixel, and an original pixel adjacent to the second original pixel and opposite to the first original pixel is taken as a fourth original pixel, the edge component is calculated on the basis of pixel data on the first to fourth original pixels at the first step.

11. The image interpolating method according to claim 9, characterized in that letting d1 be the pixel data on the first original pixel, d2 be the pixel data on the second original pixel, d3 be the pixel data on the third original pixel, and d4 be the pixel data on the fourth original pixel, an edge component E is calculated on the basis of an equation for operation $E = -d3 + d1 + d2 - d4$.

12. The image interpolating method according to claim 11, characterized in that letting Q be a pseudo noise component, and E be the edge component calculated at the first step, an edge component E1 after the correction found at the second step is given by the following expression:

if $-Q \leqq E \leqq Q$, then $E1 = 0$, and

if $E > Q$ or $E < -Q$, then $E1 = E$.

13. The image interpolating method according

to claim 12, characterized in that letting E1 be the edge component after the correction found at the second step, d_{max} be the larger one of the pixel data on the first original pixel and the pixel data on the second original pixel, d_{min} be the smaller one of them, dc be the average of d_{max} and d_{min}, and α ($0 \leqq \alpha \leqq 1$) and γ be previously set factors, a range S where the pixel data on the interpolated pixel is settable is found on the basis of the following expression at the third step:

if $E1 \geqq 0$, then $d_{min} \cdot \alpha + dc(1-\alpha) \leqq S \leqq d_{max} \cdot \alpha + dc(1-\alpha) + E1 \cdot \gamma$, and

if $E1 < 0$, then $d_{min} \cdot \alpha + dc(1-\alpha) + E1 \cdot \gamma \leqq S \leqq d_{max} \cdot \alpha + dc(1-\alpha)$.

14. The image interpolating method according to claim 9, characterized in that

when a direction connecting the first original pixel and the second original pixel is defined as a vertical direction, a direction perpendicular to the vertical direction is defined as a right-and-left direction, a set of opposed pixels is taken as D12 and D24, two original pixels adjacent to the one opposed pixel D12 on the right and left sides are taken as D11 and D13, two original pixels adjacent to the opposed pixel D12 on the upper and

lower sides are taken as D02 and D22, two original pixels adjacent to the other opposed pixel D24 on the right and left sides are taken as D23 and D25, two original pixels adjacent to the opposed pixel D24 on the upper and lower sides are taken as D14 and D34, pixel data on the original pixels D02, D11, D12, D13, D14, D22, D23, D24, D25, and D34 are respectively taken as d02, d11, d12, d13, d14, d22, d23, d24, d25, and d34, $\beta 1$ and $\beta 2$ are taken as predetermined factors, and the pixel data in the settable range S found at the third step is taken as x, an equation for calculating the correlation value L corresponding to the set is expressed by the following equations:

$$L = |d12-x| + |d24-x| + \beta 1 \cdot H1 - \beta 2 \cdot V1$$

$$H1 = MAX\{(|d11-d12| + |d12-d13|), (|d23-d24| + |d24-d25|)\}$$

$$V1 = MIN\{(|d02-d12| + |d12-d22|), (|d14-d24| + |d24-d34|)\}$$

15. The image interpolating method according to claim 9, characterized in that the fifth step comprises the steps of

selecting the minimum of the minimum correlation values found for the sets at the fourth step,

extracting the pixel data on the interpolated pixel in a case where the selected minimum of the minimum correlation values is given,

determining, when the number of minimums of the minimum correlation values is one, the pixel data on the interpolated pixel in a case where the minimum of the minimum correlation values is given as the pixel data on the interpolated pixel, and

determining, when there are a plurality of minimums of the minimum correlation values, the average of the pixel data on the interpolated pixel in a case where the minimums of the minimum correlation values are respectively given as the pixel data on the interpolated pixel.

16. The image interpolating method according to claim 9, characterized in that the fifth step comprises the steps of

selecting the minimum of the minimum correlation values found for the sets at the fourth step,

extracting the pixel data on the interpolated pixel in a case where the selected minimum of the minimum correlation values is given,

determining, when the number of minimums of the minimum correlation values is one, the pixel data

on the interpolated pixel in a case where the minimum of the minimum correlation values is given as the pixel data on the interpolated pixel, and

extracting, when there are a plurality of minimums of the minimum correlation values, the maximum and the minimum of the pixel data on the interpolated pixel in a case where the minimums of the minimum correlation values are respectively given, and determining the average of the extracted maximum and minimum as the pixel data on the interpolated pixel.

17. The image interpolating method according to claim 9, characterized in that the fifth step comprises the steps of

selecting the minimum of the minimum correlation values found for the sets at the fourth step,

extracting the pixel data on the interpolated pixel in a case where the selected minimum of the minimum correlation values is given;

determining, when the number of minimums of the minimum correlation values is one, the pixel data on the interpolated pixel in a case where the minimum of the minimum correlation values is given as the pixel data on the interpolated pixel, and

selecting, when there are a plurality of minimums of the minimum correlation values, the pixel data obtained from opposed pixels in closest proximity to the interpolated pixel out of the pixel data on the interpolated pixel in a case where the minimums of the minimum correlation values are respectively given, and determining, when the number of the selected pixel data is one, the pixel data as the pixel data on the interpolated pixel, while determining, when the number of the selected pixel data is two, the average of the pixel data as the pixel data on the interpolated pixel.

18. In an image interpolating method for interpolating a pixel at a central position among four original pixels comprising a first original pixel and a second original pixel which are adjacent to each other on the right and left sides, a third pixel adjacent to the first original pixel on the lower side, and a fourth pixel adjacent to the second original pixel on the lower side, an image interpolating method is characterized by comprising:

a first step of calculating a first edge component for judging whether or not an interpolated pixel exists in the vicinity of an edge position of

original image data on the basis of pixel data on the first original pixel, the fourth original pixel, a fifth original pixel on an extension of a line connecting the first original pixel and the fourth original pixel and adjacent to the first original pixel diagonally to the upper left, and a sixth original pixel on the extension of the line connecting the first original pixel and the fourth original pixel and adjacent to the fourth original pixel diagonally to the lower right;

a second step of calculating a second edge component for judging whether or not the interpolated pixel exists in the vicinity of the edge position of the original image data on the basis of pixel data on the second original pixel, the third original pixel, a seventh original pixel on an extension of a line connecting the second original pixel and the third original pixel and adjacent to the second original pixel diagonally to the upper right, and an eighth original pixel on the extension of the line connecting the second original pixel and the third original pixel and adjacent to the third original pixel diagonally to the lower left;

a third step of finding a first range where pixel data on the interpolated pixel is settable on the

basis of the first edge component and the pixel data on the first and fourth original pixels and a second range where the pixel data on the interpolated pixel is settable on the basis of the second edge component and the pixel data on the second and third original pixels;

a fourth step of judging whether or not portions which are overlapped with each other exist in the first settable range and the second settable range;

a fifth step of calculating, when there exist no portions which are overlapped with each other in the first settable range and the second settable range, the average of the pixel data on the first to fourth original pixels, and determining the result of the calculation as the pixel data on the interpolated pixel;

a sixth step of setting, when there exist portions which are overlapped with each other in the first settable range and the second settable range, the overlapped portions as a settable range, then selecting a plurality of sets of opposed pixels between which the interpolated pixel is sandwiched diagonally, and finding, for each of the sets, the pixel data on the interpolated pixel in a case where a correlation value represented by the sum of the

absolute values of the differences between the pixel data on the interpolated pixel and pixel data on the opposed pixels is the minimum in the range where the pixel data on the interpolated pixel is settable and the minimum correlation value; and

a seventh step of finding the pixel data on the interpolated pixel on the basis of the pixel data on the interpolated pixel in the case where the correlation value is the minimum and the minimum correlation value which are found for each of the sets at said sixth step.

19. The image interpolating method according to claim 18, characterized in that

letting d1 be the pixel data on the first original pixel, d4 be the pixel data on the fourth original pixel, d5 be the pixel data on the fifth original pixel, d6 be the pixel data on the sixth original pixel, and EL be a first edge component, the first edge component EL is calculated on the basis of an equation for operation EL = -d5 + d1 + d4 - d6 at the first step, and

letting d2 be the pixel data on the second original pixel, d3 be the pixel data on the third original pixel, d7 be the pixel data on the seventh original pixel, d8 be the pixel data on the eighth

original pixel, and ER be a second edge component, the second edge component ER is calculated on the basis of an equation for operation ER = -d7 + d2 + d3 - d8 at the second step.

20. The image interpolating method according to claim 19, characterized in that letting EL be the first edge component, ER be the second edge component, Th be a predetermined threshold, dL_{max} be the larger one of the pixel data on the first original pixel and the pixel data on the fourth original pixel, dL_{min} be the smaller one of them, dL be $dL_{max}-dL_{min}$, dR_{max} be the larger one of the pixel data on the second original pixel and the pixel data on the third original pixel, dR_{min} be the smaller one of them, and dR be $dR_{max}-dR_{min}$, a first settable range SL and a second settable range SR are found on the basis of the following expressions at the third step:

if EL > Th, then $dL_{min} + dL/2 \leqq SL \leqq dL_{max}$,

if $-Th \leqq EL \leqq Th$, then $dL_{min} + dL/4 \leqq SL \leqq dL_{max} - dL/4$, and

if EL < -Th, then $dL_{min} \leqq SL \leqq dL_{min} + dL/2$.

if ER > Th, then $dR_{min} + dR/2 \leqq SR \leqq dR_{max}$,

if $-Th \leqq ER \leqq Th$, then $dR_{min} + dR/4 \leqq SR \leqq dR_{max} - dR/4$, and

if ER < -Th, then $dR_{min} \leqq SR \leqq dR_{min} + dR/2$.

21. The image interpolating method according to claim 18, characterized in that letting x be the pixel data in the settable range S set at the sixth step, and da and db be respectively the pixel data on the two original pixels composing one set of opposed pixels, a correlation value L corresponding to the set is calculated by $L = |da-x| + |db-x|$.

22. The image interpolating method according to claim 18, characterized in that the seventh step comprises the steps of

selecting the minimum of the minimum correlation values found for the sets at the sixth step,

extracting the pixel data on the interpolated pixel in a case where the selected minimum of the minimum correlation values is given,

determining, when the number of minimums of the minimum correlation values is one, the pixel data on the interpolated pixel in a case where the minimum of the minimum correlation values is given as the pixel data on the interpolated pixel, and

determining, when there are a plurality of minimums of the minimum correlation values, the average of the pixel data on the interpolated pixel in a case where the minimums of the minimum

correlation values are respectively given as the pixel data on the interpolated pixel.

23. The image interpolating method according to claim 18, characterized in that the seventh step comprises the steps of

selecting the minimum of the minimum correlation values found for the sets at the sixth step,

extracting the pixel data on the interpolated pixel in a case where the selected minimum of the minimum correlation values is given,

determining, when the number of minimums of the minimum correlation values is one, the pixel data on the interpolated pixel in a case where the minimum of the minimum correlation values is given as the pixel data on the interpolated pixel, and

extracting, when there are a plurality of minimums of the minimum correlation values, the maximum and the minimum of the pixel data on the interpolated pixel in a case where the minimums of the minimum correlation values are respectively given, and determining the average of the extracted maximum and minimum as the pixel data on the interpolated pixel.

24. The image interpolating method according

to claim 18, characterized in that the seventh step comprises the steps of

selecting the minimum of the minimum correlation values found for the sets at the sixth step,

extracting the pixel data on the interpolated pixel in a case where the selected minimum of the minimum correlation values is given,

determining, when the number of minimums of the minimum correlation values is one, the pixel data on the interpolated pixel in a case where the minimum of the minimum correlation values is given as the pixel data on the interpolated pixel, and

selecting, when there are a plurality of minimums of the minimum correlation values, the pixel data obtained from opposed pixels in closest proximity to the interpolated pixel out of the pixel data on the interpolated pixel in a case where the minimums of the minimum correlation values are respectively given, and determining, when the number of the selected pixel data is one, the pixel data as the pixel data on the interpolated pixel, while determining, when the number of the selected pixel data is two, the average of the pixel data as the pixel data on the interpolated pixel.

25. In an image interpolating method for interpolating a pixel at a central position among four original pixels comprising a first original pixel and a second original pixel which are adjacent to each other on the right and left sides, a third pixel adjacent to the first original pixel on the lower side, and a fourth pixel adjacent to the second original pixel on the lower side, an image interpolating method is characterized by comprising:

a first step of calculating a first edge component for judging whether or not an interpolated pixel exists in the vicinity of an edge position of original image data on the basis of pixel data on the first original pixel, the fourth original pixel, a fifth original pixel on an extension of a line connecting the first original pixel and the fourth original pixel and adjacent to the first original pixel diagonally to the upper left, and a sixth original pixel on the extension of the line connecting the first original pixel and the fourth original pixel and adjacent to the fourth original pixel diagonally to the lower right;

a second step of calculating a second edge component for judging whether or not the

interpolated pixel exists in the vicinity of the edge position of the original image data on the basis of pixel data on the second original pixel, the third original pixel, a seventh original pixel on an extension of a line connecting the second original pixel and the third original pixel and adjacent to the second original pixel diagonally to the upper right, and an eighth original pixel on the extension of the line connecting the second original pixel and the third original pixel and adjacent to the third original pixel diagonally to the lower left;

a third step of respectively correcting the calculated first and second edge components on the basis of predetermined pseudo noise components;

a fourth step of finding a first range where pixel data on the interpolated pixel is settable on the basis of a first edge component after the correction and the pixel data on the first and fourth original pixels and a second range where the pixel data on the interpolated pixel is settable on the basis of a second edge component after the correction and the pixel data on the second and third original pixels;

a fifth step of judging whether or not portions which are overlapped with each other exist in the

first settable range and the second settable range;

a sixth step of calculating, when there exist no portions which are overlapped with each other in the first settable range and the second settable range, the average of the pixel data on the first to fourth original pixels, and determining the result of the calculation as the pixel data on the interpolated pixel;

a seventh step of setting, when there exist portions which are overlapped with each other in the first settable range and the second settable range, the overlapped portions as a settable range, then selecting a plurality of sets of opposed pixels between which the interpolated pixel is sandwiched diagonally, and finding, for each of the sets, the pixel data on the interpolated pixel in a case where a correlation value represented by the sum of the absolute values of the differences between the pixel data on the interpolated pixel and pixel data on the opposed pixels and pixel data on original pixels in the vicinity of the opposed pixels is the minimum in the range where the pixel data on the interpolated pixel is settable and the minimum correlation value; and

an eighth step of finding the pixel data on the

interpolated pixel on the basis of the pixel data on the interpolated pixel in the case where the correlation value is the minimum and the minimum correlation value which are found for each of the sets.

26. The image interpolating method according to claim 25, characterized in that

letting d1 be the pixel data on the first original pixel, d4 be the pixel data on the fourth original pixel, d5 be the pixel data on the fifth original pixel, and d6 be the pixel data on the sixth original pixel, and EL be a first edge component, the first edge component EL is calculated on the basis of an equation for operation EL = -d5 + d1 + d4 - d6 at the first step, and

letting d2 be the pixel data on the second original pixel, d3 be the pixel data on the third original pixel, d7 be the pixel data on the seventh original pixel, and d8 be the pixel data on the eighth original pixel, and ER be a second edge component, the second edge component ER is calculated on the basis of an equation for operation ER = -d7 + d2 + d3 - d8 at the second step.

27. The image interpolating method according to claim 26, characterized in that letting Q be a

pseudo noise component, EL be the first edge component, and ER be the second edge component, a first edge component EL1 after the correction and a second edge component ER1 after the correction which are found at the third step are given by the following expressions:

if $-Q \leqq EL \leqq Q$, then EL1 = 0, and

if EL > Q or EL < -Q, then EL1 = EL.

if $-Q \leqq ER \leqq Q$, then ER1 = 0, and

if ER > Q or ER < -Q, then ER1 = ER.

28. The image interpolating method according to claim 27, characterized in that letting EL1 be the first edge component after the correction, ER1 be the second edge component after the correction, dL_{max} be the larger one of the pixel data on the first original pixel and the pixel data on the fourth original pixel, dL_{min} be the smaller one of them, dLc be the average of dL_{max} and dL_{min}, dR_{max} be the larger one of the pixel data on the second original pixel and the pixel data on the third original pixel, dR_{min} be the smaller one of them, dRc be the average of dR_{max} and dR_{min}, and α and γ be previously set factors, a first settable range SL and a second settable range SR are found on the basis of the following expressions at the fourth step:

if EL1 $\geqq$ 0, then $dL_{min} \cdot \alpha + dLc(1-\alpha) \leqq SL \leqq dL_{max} \cdot \alpha + dLc(1-\alpha) + EL1 \cdot \gamma$, and

if EL1 < 0, then $dL_{min} \cdot \alpha + dLc(1-\alpha) + EL1 \cdot \gamma \leqq SL \leqq dL_{max} \cdot \alpha + dLc(1-\alpha)$.

if ER1 $\geqq$ 0, then $dR_{min} \cdot \alpha + dRc(1-\alpha) \leqq SR \leqq dR_{max} \cdot \alpha + dRc(1-\alpha) + ER1 \cdot \gamma$, and

if ER1 < 0, then $dR_{min} \cdot \alpha + dRc(1-\alpha) + ER1 \cdot \gamma \leqq SR \leqq dR_{max} \cdot \alpha + dRc(1-\alpha)$.

29. The image interpolating method according to claim 25, characterized in that letting x be the pixel+ data in the settable range S set at the seventh step, and da and db be respectively the pixel data on the two original pixels composing one set of opposed pixels, a correlation value L corresponding to the set is calculated by $L = |da-x| + |db-x|$.

30. The image interpolating method according to claim 25, characterized in that the eighth step comprises the steps of

selecting the minimum of the minimum correlation values found for the sets at the seventh step,

extracting the pixel data on the interpolated pixel in a case where the selected minimum of the minimum correlation values is given,

determining, when the number of minimums of the

minimum correlation values is one, the pixel data on the interpolated pixel in a case where the minimum of the minimum correlation values is given as the pixel data on the interpolated pixel, and

determining, when there are a plurality of minimums of the minimum correlation values, the average of the pixel data on the interpolated pixel in a case where the minimums of the minimum correlation values are respectively given as the pixel data on the interpolated pixel.

31. The image interpolating method according to claim 25, characterized in that the eighth step comprises the steps of

selecting the minimum of the minimum correlation values found for the sets at the seventh step,

extracting the pixel data on the interpolated pixel in a case where the selected minimum of the minimum correlation values is given,

determining, when the number of minimums of the minimum correlation values is one, the pixel data on the interpolated pixel in a case where the minimum of the minimum correlation values is given as the pixel data on the interpolated pixel, and

extracting, when there are a plurality of

minimums of the minimum correlation values, the maximum and the minimum of the pixel data on the interpolated pixel in a case where the minimums of the minimum correlation values are respectively given, and determining the average of the extracted maximum and minimum as the pixel data on the interpolated pixel.

32. The image interpolating method according to claim 25, characterized in that the eighth step comprises the steps of

selecting the minimum of the minimum correlation values found for the sets at the seventh step,

extracting the pixel data on the interpolated pixel in a case where the selected minimum of the minimum correlation values is given;

determining, when the number of minimums of the minimum correlation values is one, the pixel data on the interpolated pixel in a case where the minimum of the minimum correlation values is given as the pixel data on the interpolated pixel, and

selecting, when there are a plurality of minimums of the minimum correlation values, the pixel data obtained from opposed pixels in closest proximity to the interpolated pixel out of the pixel

data on the interpolated pixel in a case where the minimums of the minimum correlation values are respectively given, and determining, when the number of the selected pixel data is one, the pixel data as the pixel data on the interpolated pixel, while determining, when the number of the selected pixel data is two, the average of the pixel data as the pixel data on the interpolated pixel.